



**State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES**

6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-3503 FAX (603) 271-2867



Tillotson Healthcare Corporation
Route 1, Box 2000
Dixville Notch, NH 03576

RE: Lake Abeniki Dam
Dam #65.03

**ADMINISTRATIVE ORDER
NO. WD 02-17**

April 26, 2002

A. INTRODUCTION

This Administrative Order is issued by the Department of Environmental Services, Water Division to Tillotson Healthcare Corporation pursuant to RSA 482:12 and RSA 482:87. This Administrative Order is effective upon issuance.

B. PARTIES

1. The Department of Environmental Services, Water Division ("DES"), is a duly constituted administrative agency of the State of New Hampshire, having its principal office at 6 Hazen Drive, Concord, NH 03301.
2. Tillotson Healthcare Corporation ("Tillotson") is a New Hampshire corporation having a mailing address of Route 1, Box 2000, Dixville Notch, NH 03576.

C. STATEMENTS OF FACTS AND LAW

1. Pursuant to RSA 482, DES regulates the construction and maintenance of dams so as to meet the stated statutory objectives, including the regulation of water levels, the lessening of flood damage, and the enhancement of public safety. Pursuant to RSA 482:87 the Commissioner of DES has adopted NH Admin. Rules Env-Wr 100-700 to implement this program.
2. According to DES records, Tillotson owns the dam in Dixville Notch, NH known as the Lake Abeniki Dam, further identified as Dam #65.03 ("the Dam"). The Dam is located approximately 3,500 feet upstream of the Balsams Hotel ("Hotel").
3. RSA 482:12 requires DES to periodically inspect all dams in the state which may pose a menace to public safety, and to take action to ensure that the dam is repaired or reconstructed if the inspection indicates that the public safety so requires.
4. RSA 482:2, V defines a "dam in disrepair" as a dam which is a menace to public safety and is incapable of safely impounding flood waters to its crest, or is incapable of maintaining a reasonably constant level of waters impounded or which does not contain adequate gates and sluiceways to provide for the holding or controlled discharge of waters impounded.
5. RSA 482:11-a requires the owner of a dam to maintain and repair the dam so that it does not become a dam in disrepair.

6. Env-Wr 101.21 defines “menace to public safety” as any dam whose failure would threaten life or property. Property, when used in this context, means buildings, structures or other real estate.
7. Env-Wr 101.06 defines “Class C Structure” as a dam with a high hazard potential, the failure of which would result in probable loss of life or major damage to interstate highways.
8. Env-Wr 101.31 defines “probable loss of life” as the risk posed by the inundation above the first floor elevation of a habitable structure during a dam breach.
9. The Dam has been classified as a Class C Structure.
10. The August 1978 Army Corps of Engineers (“COE”) Phase I inspection report documented a failure of the Dam that occurred in 1960. Flooding was reported above the first floor elevation of the Hotel.
11. In January of 1993, Tillotson’s engineering consultant, Nobis Engineering, completed an Emergency Action Plan, breach analyses, and inundation map for the Dam. On page 12 of the Emergency Action Plan Appendix, Nobis Engineering states that the resultant flood wave produced from a dam failure will reach elevation 1856, which is equivalent to 1.0 foot above the first floor elevation of the Hotel.
12. DES or its predecessor for dam regulation, the Water Resources Board, has communicated with Tillotson regarding the safety of the Dam since at least the early 1980s. Some of the more recent correspondence includes the following:
 - a. July 18, 1996: DES issues a Letter of Deficiency (“LOD”) to Tillotson, requesting that certain deficiencies in the Dam be addressed. Item #5 indicates that the fiberglass veneer is peeling away, exposing the deteriorated substructure of the spillway walls.
 - b. August 6, 1996: Tillotson submits a schedule of repairs, indicating in Item #4 that it will make necessary repairs to the spillway structure by October 31, 1997. The proposed work includes inspection of timber spillway and subsequent replacement of components as necessary.
 - c. August 4, 1997: DES states in a letter to Tillotson that until spillway repairs are made to the structure, weekly monitoring should take place.
 - d. November 9, 1999: Tillotson sends a letter to DES indicating that Nobis Engineering will be conducting an assessment of the Dam and will be making recommendations for long-term remedial actions. In addition, Tillotson indicates that repairs will be made to the training walls on the West side of the spillway during the summer of 1999.
 - e. January 28, 2000: DES sends letter to Tillotson indicating partial compliance with the July 18, 1996 LOD.
 - f. March 6, 2000: DES receives O&M Plan from Tillotson as requested in a DES letter dated January 28, 1999.

- g. March 6, 2000: Tillotson notifies DES that Nobis Engineering inspected the dam and should have the assessment complete within 30-45 days. (No reports have been received by DES as of April 17, 2002.)
- h. April 13, 2000: DES sends letter to Tillotson indicating that the spillway does not have adequate discharge capacity and requesting Tillotson to conduct a hydrologic analyses. (As of April 17, 2002, DES has not received a response from Tillotson.)

13. A comparison of photos from 1996 and 2000 shows that additional ballast material is missing from the timber cribs. There also has been additional peeling off of the fiberglass veneer exposing more rotted substructure. Steel sheeting has been installed on the spillway approach training wall to shore up the failing timber walls.

14. On April 18, 2002, DES conducted a scheduled inspection of the Dam and found the following conditions:

a. Spillway/Timber Crib Walls:

- (1) The bottom right side spillway training wall has failed on the second tier up from the bottom.
- (2) The bottom left hand side tier timber crib wall has failed.
- (3) Only 9 of the original 13 horizontal support braces remain across the spillway.
- (4) The lower portion of both the right and left downstream timber training walls had rotted and was covered with pieces of plywood. (DES believes this occurred in the 1983-1984 time frame.)
- (5) A fiberglass veneer coating was installed over the timber spillway in conjunction with horizontal steel braces. (DES believes this occurred in 1987.)
- (6) There has been recurring sinkholes and erosion along the outside of both training walls and from within the timber cribs. (It is evident from comparing historical photos that the ballast material continues to be displaced.)
- (7) There is currently a wholesale loss of the fiberglass veneer coating along the bottom portion of the spillway steps and training walls.
- (8) Steel plates have been placed over the cracks in the veneer on the upper most spillway step.
- (9) The horizontal steel braces are currently braced against timbers that have no ballast material behind them.
- (10) The fiberglass veneer located on both the left and right spillway training walls is buckled along each tier of the spillway indicating possible failure of the wooded substructure.

- (11) The upstream concrete spillway cap is deteriorated.
 - b. There are two large recurring sinkholes in the following locations:
 - (1) Right embankment on the left side of the gate operator concrete structure adjacent to the upstream face. The sinkhole is approximately 3' x 2' x 4' deep.
 - (2) Right embankment adjacent to the spillway training wall located 6 feet downstream from the upstream face. The sinkhole is approximately 4' x 2' x 1' deep. There is additional soil cracking on the crest just downstream from this sinkhole.
 - c. The right embankment is showing signs of failure.
 - (1) There is a soil crack on the downstream face of the embankment 4 inches wide, 5 inches deep and 8 feet long located adjacent to the top tier of the timber crib spillway training walls.
 - (2) There is a sinkhole on the downstream face 1 foot in diameter and 1 foot deep located approximately 15 feet to the right of the second tier from the top of the spillway training walls (*i.e.*, 6 feet below the crest of the dam).
 - d. The upstream face of both the left and right embankments is eroded, possibly due to wave action. As a result of the soil erosion, the upstream slope has become steep.
 - e. There is a leak in the penstock with a vertical stream of water shooting approximately 15 feet into the air. The leak is located approximately half way between the Dam and the Hotel. It appears that this leak has existed for at least the duration of the winter, as there was a 12-foot-high block of ice adjacent to the penstock that appears to have resulted from the leak.
 - f. The concrete gate operator structure is in poor condition. The concrete is eroded around the entire structure.
 - g. The upstream spillway training walls with steel plates are no longer vertical
 - h. The left embankment crest is uneven, with several sinkholes along the length of the crest.
 - i. Soil is missing from the upstream face of the left embankment at the contact with the vertical steel plate training wall.
 - j. The condition of the low level outlet is unknown. The ability to drawdown the lake in the event of an emergency is unknown.
15. The Dam in its current condition is a menace to public safety, as failure of the Dam would threaten life or property.
16. The Dam has become a dam in disrepair as defined by RSA 482:2, V.

17. Pursuant to RSA 482:11-a, Tillotson has a duty to maintain the Dam.
18. Public safety requires action to be taken to ensure the integrity of the Dam and the safety of the public and property.

D. DETERMINATION OF VIOLATIONS

1. Tillotson has violated RSA 482:11-a by failing to maintain the Dam to prevent it from becoming a "dam in disrepair".

E. ORDER

Based on the above findings and determinations, DES hereby orders Tillotson as follows:

Immediately:

1. Lower the impoundment 2 feet below the spillway crest of the Dam and maintain the water surface at a level no higher than 2 feet below spillway crest until such time as compliance with items E.2 through E.7 of this Order has been achieved.

By May 13, 2002

2. Retain the services of a professional engineer licensed in the State of New Hampshire and experienced in dam engineering.
3. Investigate the feasibility of developing alternative sources of water for fire protection to allow the complete draining the Abeniki Lake impoundment, and report the results of that investigation to DES.
4. If alternative sources of water for fire protection cannot be developed immediately, then develop plans to immediately stabilize the spillway until permanent corrective measures can be implemented.

By August 1, 2002:

5. Submit detailed engineering plans and specifications to:
 - a. Breach or permanently lower the dam structure in accordance with Env-Wr 504.08-504.11; or
 - b. Correct all identified deficiencies.
6. Based on the alternative selected under Item No. 5, work with DES to establish a schedule for the implementation of the selected alternative.
7. Implement the selected alternative in accordance with the schedule developed pursuant to E.6.

8. Send correspondence, data, reports, and other submissions made in connection with this Administrative Order, **other than appeals**, to DES as follows:

Jeffrey M. Blaney, Dam Safety Engineer, Dam Bureau
DES Water Division
6 Hazen Drive
Concord, NH 03301
Fax: (603) 271-7894
e-mail: jblaney@des.state.nh.us

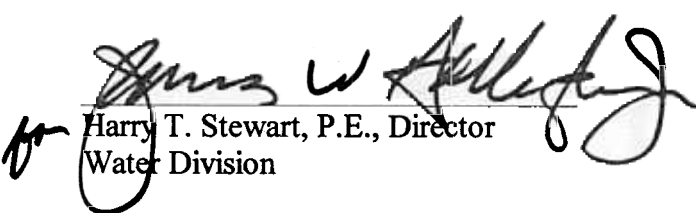
F. APPEAL

Any person aggrieved by this Order may appeal the Order to the Water Council by filing an appeal that meets the requirements specified in Env-WC 200 within 30 days of the date of this Order. Copies of the rule are available from the DES Public Information Center at (603) 271-2975 or at <http://www.des.state.nh.us/desadmin.htm>. Appealing the Order does not automatically relieve Tillotson of the obligation to comply with the Order.

G. OTHER PROVISIONS

Please note that RSA 482:89 provides for administrative fines and criminal penalties for the violations noted in this Order. DES will continue to monitor Tillotson's compliance with applicable requirements and will take appropriate action if additional violations are discovered.

This Order is being recorded in the Coos County Registry of Deeds so as to run with the land.


Harry T. Stewart, P.E., Director
Water Division


George Dana Bisbee
Assistant Commissioner

Certified Mail/RRR: 7000 0600 0023 9936 1062

cc Gretchen Rule, DES Legal Unit
Public Information Officer, DES PIP Office
NH AGO
Town of Dixville Notch